40. A conjugate, comprising a polymeric carrier having a maximum of 100 monomeric units which contains 1-10 hapten molecules and 1-10 marker groups or solid phase binding groups which are coupled to reactive side groups at predetermined positions on the polymeric carrier, wherein the monomeric units are amino acids and the marker groups are luminescent metal chelates.

41. The conjugate as claimed in one of claims 39 and 40, wherein the polymeric carrier has 3-80 monomeric units.

42. The conjugate as claimed in one of claims 39 and 40, wherein the polymeric carrier has 5-60 monomeric units.

43. The conjugate as claimed in one of claims 39 and 40, wherein the conjugate contains 1-6 hapten molecules.

44. The conjugate as claimed in one of claims 39 and 40, wherein the conjugate contains 2-8 marker groups or solid phase binding groups.

45. The conjugate as claimed in claim 39, wherein the polymeric carrier comprises a chain composed of monomeric units which are at least one of nucleotides and nucleotide analogues.

46. The conjugate as claimed in claim 39, wherein the polymeric carrier comprises a chain composed of peptide nucleic acids.

47. The conjugate as claimed in claim 45, wherein the polymeric carrier is present as a double strand.

48. The conjugate as claimed in claim 47, wherein the double strand contains at least one chain which comprises peptide nucleic acids.

49. The conjugate as claimed in one of claims 39 and 40, wherein the reactive side groups are at least one of reactive amino side groups and reactive thiol side groups.

50. The conjugate as claimed in claim 39, wherein the conjugate contains marker groups which are selected from the group consisting of luminescent metal chelates and fluorescent groups.

51. The conjugate as claimed in one of claims 39 and 40, wherein the conjugate contains solid phase binding groups which are selected from the group consisting of biotin and biotin analogues.

52. The conjugate as claimed in claim 40, wherein the polymeric carrier contains at least one of a positive charge carrier and a negative charge carrier.

53. The conjugate as claimed in claim 50, wherein the marker groups are luminescent metal chelates and the polymeric carrier contains at least one of a positive charge carrier and a negative charge carrier.

54. The conjugate as claimed in claim 50, wherein the marker groups are fluorescent groups and the polymeric carrier has an essentially helical structure.

55. The conjugate as claimed in one of claims 39 and 40, wherein each of the hapten molecules is an immunologically reactive molecule having a molecular mass of 100-2000 Daltons.

56. The conjugate as claimed in claim 55, wherein the hapten molecules are selected from the group consisting of pharmacologically active substances, hormones, metabolites, vitamins, mediators and neurotransmitters.

57. The conjugate as claimed in one of claims 39 and 40, wherein the hapten molecules are immunologically reactive peptide epitopes having a length of up to 30 amino acids.

58. The conjugate as claimed in one of claims 39 and 40, wherein the hapten molecules are nucleic acids having a length of up to 50 nucleotides.

59. The conjugate as claimed in one of claims 39 and 40, wherein the hapten molecules are peptide nucleic acids having a length of up to 50 monomeric units.

60. A process for producing a conjugate comprising a polymeric carrier having a maximum of 100 monomeric units which contains 1-10 hapten molecules and 1-10 marker groups or solid phase binding groups which are coupled to reactive side groups at predetermined positions on the polymeric carrier, wherein the monomeric units are selected from at least one of nucleotides, nucleotide analogues, amino acids and peptide nucleic acids, the process comprising synthesizing the polymeric carrier on a solid phase by linking together the monomeric units, wherein at least one of the following steps (a) and (b) is conducted:

(a) a plurality of monomeric units are covalently coupled to at least one of hapten molecules and marker groups or solid phase binding groups and, during said synthesizing step, the plurality of monomeric units are introduced onto the polymeric carrier at predetermined positions on the polymeric carrier; and

(b) after said synthesizing step, at least one of activated hapten molecules and marker groups or solid phase binding groups are coupled to reactive side groups of the polymeric carrier at predetermined positions on the polymeric carrier.

61. The process as claimed in claim 60, wherein the polymeric carrier is a peptide carrier and the monomeric units are amino acid derivatives.

62. The process as claimed in claim 60, wherein in step (a), the plurality of monomeric units are coupled to the at least one of hapten molecules and marker groups or solid phase binding groups via primary amino groups or thiol groups.

63. The process as claimed in claim 60, wherein the monomeric units contain protecting groups and, in step (b), the protecting groups are cleaved and thereafter the at least one of activated hapten molecules and marker groups or solid phase binding groups are coupled to primary amino or thiol side groups of the polymeric carrier.

64. The process as claimed in claim 60, wherein in step (b), the at least one of activated hapten molecules and marker groups or solid phase binding groups are coupled to primary amino side groups of the polymeric carrier, wherein a monomeric unit having a first protecting group for the primary amino side groups is used at predetermined positions on the polymeric carrier at which the hapten molecules are to be coupled and a monomeric unit having a second protecting group for the primary amino side groups is used at predetermined positions on the polymeric carrier at which the marker groups or solid phase binding groups are to be coupled, and the first protecting group and the second protecting group are selected in such a way as to enable the first protecting group and the second protecting group to be selectively cleaved.

65. The process as claimed in claim 64, wherein the first protecting group and the second protecting group are selected from the group consisting of acid-labile protecting groups and acid-stable protecting groups.

66. In an immunological method in which an immunologically reactive molecule is incubated with an immunological binding partner to be determined in a competitive or non-competitive immunoassay and any immunological binding in the immunoassay is correlated with the presence or amount of the immunological binding partner, the improvement comprising using the conjugate as claimed in one of claims 39 and 40 as the immunologically reactive molecule, wherein the hapten molecules are immunologically reactive.

67. In a nucleic acid diagnostic method in which a detection molecule is incubated with a nucleic acid to be determined and any binding between the detection molecule and the nucleic acid to be determined is correlated with the presence or amount of the nucleic acid to be determined, the improvement comprising using the conjugate as claimed in one of claims 39 and 40 as the detection molecule, wherein the hapten molecules comprise nucleic acid and the detection molecule is capable of hybridizing with the nucleic acid to be determined.

68. The method of claim 66, wherein more than one hapten molecule is present on the conjugate, and the more than one hapten molecule are used as polyhaptens.